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ABSTRACT

This paper lends support to Richard E. Clark's position that media make no difference in student achievement, but also argues that alternative ways of thinking about media--i.e., about the differences media do make along with the differences they can make--are necessary and important. Two major areas of study are examined. In discussing the first area--cognitive and affective learning outcomes of the use of different media for the delivery of instruction--it is pointed out that there may be no differences in learning achievement from a cognitive point of view, but there could be large differences in attitude and motivation that might interfere with learning of cognitive tasks from an affective point of view. In considering the second area--the differences between common usage and the potential of a medium--it is argued that each medium is a combination of attributes capable of carrying various combinations of different symbol systems, and that only to the extent that media carry identical symbol systems relating to "critical" content can they be interchangeable. It is suggested that neurological theories of how the brain functions promise an immense contribution to the psychological study of how people learn, and that direct exploration of new cognitive constructs along with psychophysics might strengthen the bond between cognitive psychological research, neurological brain research, and instructional design theories. This approach, it is argued, would lead to more accurate descriptions of the learning process, new constructs for research, and answers not to whether singers or songs are better, but why. (6 references) (CGD)

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Title:

Symposium: Interactive Video Symposium: The Singer or the Song-- An Extension of Clark's Media Research Discussion

Paper #4: The Singer or the Song

Author: Michael Yacci

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The Singer or the Song

A COMMON SENSE APPROACH

This presentation is offered as an extension of Richard Clark's position regarding media. Through this paper, I hope to translate Clark's argument into practical terms, and point out some different issues that have not yet been resolved.

Clark has been the strongest advocate of a particular point of view regarding media--that media make no difference in student achievement. In other words, the medium itself is not a significant contributor to achieving the ends of learning, but rather instructional strategies--the particular ways that instruction is assembled and the components thereof--are the true independent variables in a learning situation. Clark has stated that media are "mere vehicles" that can be used for the delivery of instruction--but are not required for learning.

Clark has cited numerous research studies that have failed to control for the effects of instructional strategies. Essentially these studies have compared educational "apples with oranges," and consequently these studies are suspect to a confounding effect, that is, the notion that there could be other, equally rational reasons for any given difference in achievement. Clark claims that previous media comparison studies, which tend to turn up with

the emergence of any new media/technology, all fail to control for the effect of instructional strategies within different treatment groups.

Obviously, then, these "media comparison" studies that Clark cites, are really *not* studies that are designed to compare the effects of media in instruction. Since they use different designs, instructional components and sometimes different symbol systems, they are essentially studies that compared the effects of different *mediated instructional designs*--but not different media.

From a "pure" research perspective, it would seem that Clark is correct in his conclusions. Adding Salomon's notion of symbol systems--the various ways that information is encoded--would suggest that if we controlled for different symbol systems along with different instructional strategies, then we might seemingly have a media comparison study that would be valid. Comparing the amount of cognitive learning when identical instructional strategies and symbol systems are used should logically produce no difference in achievement. What might such a study look like? For example, one group could be given several paragraphs on paper to read, while a second group is given exactly the same material, except the second group has the material projected on a wall using a slide projector. An achievement test would probably show no difference between the groups--in other words, the medium would have made no difference in such a learning situation. Now, perhaps changing the symbol system would make a difference. For example, if one group *read* the paragraph while a second group *heard* an audio tape of the information. Of course, if a difference in achievement occurred, it could be due to the different symbol systems that were used, not necessarily the medium that carried either symbol system. While this logical type of "thought experiment" really doesn't confirm Clark's conclusions, it brings home the common sense side of his position. Indeed, in such an experimental situation where both symbol systems and instructional strategies are held constant, it would be remarkable if there **was** a significant difference in achievement.

My goal today is to agree in principle with Clark's position, but to extend it to consider alternative ways of thinking about media

regarding the difference media **do** make along with the difference that they **can** make.

I would like to take a somewhat logical look at two major areas. These areas are the differences between cognitive and affective learning outcomes, and the differences between common usage and potential of a medium.

COGNITIVE AND AFFECTIVE OUTCOMES

Clark's famous and often quoted analogy equates media and instruction with food and the truck used to deliver the food: the medium that delivers instruction will have no more of an impact on student achievement than the truck that delivers food will have on the nutritional value of that food. In other words, media are "mere vehicles" for the delivery of instruction.

I would like to offer a different analogy that might lead to a different conclusion: the singer and the song. That is, at times the medium is as important as the message--and at times more so.

Music business people generally agree that the best way to sell records is not through massive airplay, but rather "putting the artist on the road." People tend to like musicians that they have seen perform live . This explains why musicians still tour despite the sophisticated mass communication technology currently available. Now, it is interesting that a member of the audience can like a performer but be unable to restate any of the lyrics to any songs. Hence, the audience may not be perceiving any cognitive message at all. But through real "contact" with the artist, a change in attitude or belief occurs. This points to the real key to this analogy--there are definite affective and cognitive differences between mediated music and live music. And there are differences between mediated instruction and live instruction.

A song is really "content" delivered by a singer, the same way that instruction is delivered by a medium. Is there a difference between Frank Sinatra and Frank Schwartz? That probably

depends on if you're a Sinatra fan or not; if so, then there is a major difference in "mere" delivery vehicle!

A *fan* would be happy to hear Sinatra sing anything--so a fan will attend to any content that is presented, simply through his affect toward the vehicle (Sinatra). To others, it may be the song that is important. "My Way" might be a song that interests them--and they may be totally oblivious to the performer.

If this analogy holds true for instruction, then we might conclude that certain media can evoke attention simply because of a student's continuing and previously learned affect for a medium. Was there a difference in your own attending behavior when Dr. Clark was not here in person today? While you have been exposed to the same symbol system of spoken language, some people's attention may have wandered because the **real** Richard Clark wasn't here. You wanted Sinatra--you got Schwartz.

Clark speaks of this effect in terms of attribution theory and claims that attitude toward medium is not a media attribute, but rather a learner attribute. My thoughts on this say that if using a different medium will produce greater attention, then this is indeed correlated with the medium, and should be considered a media attribute.

Of course the flip side may also be true--a strong negative affect for any medium may destroy motivation and interest. How many people tend to groan when a teacher or trainer pulls out a stack of transparencies and approaches the overhead projector? How many people have a fear of innovation and would rather not approach CBT or Interactive Video because of their fear of the medium itself? In like manner, no matter how great a voice Mohmar Khadaffi has, not many Americans want to hear him sing "Strangers in the Night." So the delivery vehicle can interact in a distracting emotional way to affect cognitive learning.

A recent study was interested in the effect of a program to help shy women start and maintain conversations with men. The delivery vehicles were both CBT treatments and text-based treatments. Although the women learned slightly more from the

text-based treatments, there was no significant difference between the two. While this study points to Clark's "no difference" conclusion, it *didn't* explore the possible differences between *live* instruction and any form of mediated instruction. It would be a logical hypothesis that a male, human instructor might significantly change the achievement levels of the learners, either for better or for worse.

Clark has identified a positive affect toward innovation as a "novelty effect," a tendency for students to work harder and achieve more when a new novel medium is used. The novelty effect tapers off after a few months, once students become accustomed to the new medium. Although I don't debate the existence of this effect, it is probable that with at least some students, a semi-permanent preference for one medium over another might occur. This seems no more unreasonable that preferring one singer over another, or one brand of toothpaste over the next. Another interesting point is that this preference may have little to do with the actual effectiveness of the product.

Thus far I have been making a case based on logic and assumptions that from a cognitive point of view, there may be no difference in learning achievement but from an affective view, for any individual, there could be large differences in attitude and motivation that might interfere with learning of cognitive tasks. Through the laws of contiguity and association, we know that affect--positive or negative--gets paired with content. So not only might media alter one's motivation toward learning, and one's willingness to attend to a message, but medium may be adding a subliminal message to the content which actually *changes* the content.

What kind of statement is made if, for example, the president of a major international company gives his state-of-the-business address using hand drawn transparencies? Or worse, he writes on a blackboard. Might that give you a subliminal message that the company is doing poorly? Suppose he gave the same speech accompanied by 35mm film or high quality slides. Might you then think that the company was doing at least okay? Although the

same symbol systems (written words) might be used, the overall message that a viewer receives is entirely different.

There are other activities and situations that just don't translate well to media--no matter how identical the symbol systems. McLuhan said in Understanding Media, "It is a truism among jazz performers that recorded jazz is as stale as yesterday's newspaper. Jazz is alive, like conversation..." As such, part of the enjoyment of jazz is the knowledge that it is spontaneous and being created on the spot, and you are privileged to be in the company of this "conversation" and creation. Sporting events are also an event where *being there* is half of the "learned" knowledge. You can watch the game on tv or read the box score for the cognitive parts of the game; the emotional, affective experience comes mainly from "being there." I once toured the house in Amsterdam where Anne Frank hid from the Nazis during World War II. Although I could probably see films of this house, and someone might even construct a simulated version of the house, it is not the same emotional experience as actually walking through the real environment. I'm not sure that this translates into a typical procedural training situation--but it does strongly suggest that in teaching affective content, media and reality factors make a definite difference and must be considered.

This is not to imply that media cannot move an audience; it is clear from the success of Hollywood all these years that media is indeed a powerful emotional medium. But, following the terms in this argument, films must use different symbol systems to produce the same emotional end. No doubt that a film of Anne Frank's house could move me, too--but it might take the addition of music, close-ups, different angles, and perhaps a story line to accomplish what a few moments of "reality" could induce. I'll come back to this point of different ways to evoke and cultivate cognitions, later in the paper.

COMMON USAGE AND POTENTIAL

Let's return to the research conclusion that if we hold all instructional strategies and symbol systems constant, then there

will be no difference in cognitive learning regardless of the medium. Recall my earlier example of two experimental groups, one group reading a page of text and the other group reading that same text projected on a wall, and my conclusion that there would not be a difference in cognitive learning under these conditions. When I have mentioned such a study to "media people" the typical comment is that research of this type exploits totally inappropriate uses of the various media. That, in fact, no media producer would ever recommend that, for example, hundreds of pages of text be delivered via overheads or slides. The most appropriate way to deliver such content would, of course, be through books or other text based media. So while Clark's position is probably true in an experimental design research situation, where all variables could possibly be controlled for, in reality no one should ever use media in such inappropriate ways.

So, the question now is turning from **does** media make a difference to **can** media make a difference.

Each medium is a combination of attributes capable of carrying various combinations of different symbol systems. To the extent that media carry identical symbol systems relating to "critical" content (Salomon's term), then each medium should be interchangeable.

However, in a pragmatic sense, some media are capable of doing more. They have more attributes, or they can support more instructional strategies, such as allowing student input, personalized feedback, etc. Each medium, then may only be able to support specific instructional designs. For example, a more complex and versatile medium such as interactive video has the potential for serving and delivering many more instructional designs than a less sophisticated medium, for example a flip chart. What is interesting here is that Clark concludes that there are any number of ways to cultivate mental processing--and that there is not a one to one correspondence with any media attribute and a type of learning. He uses the terms "sufficient conditions" as opposed to "necessary conditions." Sufficient conditions can evoke certain learning, but are not necessary conditions, since any number of media attributes can evoke the same learning. This

would make one assume that many different designs and approaches can achieve the same learning end.

However, Salomon, in 1978, said, "When critical information is coded differently in different media, learning outcomes cannot be the same because different mental operations are employed." So, I conclude that *only to the extent that similar mental operations can be stimulated, are media interchangeable.*

To tie this back to the reality versus media topic I previously mentioned, it may be that certain "live" events stimulate certain mental processes for a different *type* of learning. The awareness that an event is a real and unique experience may force different cognitive operations to occur; this may then foster different cognitive skills and learning outcomes.

The conclusion that media are interchangeable to the extent that they stimulate the same cognitive operations and skills is a powerful conclusion, and hints at some future directions for research. Adopting this perspective would hint that, along with media comparison research, even media attribute research is misleading--that we should be studying cognitive constructs that directly influence learning. This has been tried with mixed success with ATI research. However, it might be that the wrong constructs have been isolated. Aristotle said, "Break nature apart at her joints." It may be that some of our individual difference aptitudes have not been isolated in ways that maximize their predictive abilities, because they have been empirically conceived instead of theoretically derived, resulting in a shotgun approach (Jonassen, 1982).

I think that neurological theories of how the brain functions promise an immense contribution to the psychological study of how people learn. By directly exploring new cognitive constructs along with psychophysics, we might strengthen the bond between cognitive psychological research, neurological brain research, and instructional design theories. This would lead us to more accurate descriptions of the learning process, new constructs for research, and answers not to *whether* singers or songs are better, but *why*.

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